INSPECTING LANSCE STACK SAMPLING SYSTEMS

Purpose

This Meteorology and Air Quality Group (MAQ) procedure describes the steps to ensure that LANSCE stack sampling systems are in good condition, clean, and free of obstructions, and describes steps to be taken to rectify the situation prior to the start up of facility operations.

Scope

This procedure applies to maintenance performed by MAQ personnel annually during the LANSCE maintenance downtime on the particulate and gas sampling systems at the TA-53 monitored stacks ES-2 and ES-3.

In this procedure

This procedure addresses the following major topics:

Signatures

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11/05/04

General information about this procedure

Attachments

This procedure has no attachments.

History of revision

This table lists the revision history and effective dates of this procedure.

Revision	Date	Description Of Changes
0	11/5/04	New document.

Who requires training to this procedure?

The following personnel require training before implementing this procedure:

- Personnel assigned to the Rad-NESHAP stack inspection team

Training method

The training method for this procedure is **on-the-job** training by a previously-trained individual and is documented in accordance with procedure MAQ-024, "Personnel Training."

Prerequisites

In addition to training to this procedure, the following training is also required prior to performing this procedure:

- TA-53 Site-specific training (required for unescorted TA-53 access)
- TA-53 Limited Access Area training for certain experimental areas
- Radiological worker training as appropriate for different areas
- Basic Fall Protection course number 1307 (for those climbing scaffolding)
- Scaffolding user training course number 14708 (for those climbing scaffolding)

General information, continued

Definitions specific to this procedure

Facility operation: Memo ESH-17:96-291, "Sampling and Reporting Requirements for LANSCE," dated July 9, 1996, defines emissions monitoring and reporting requirements for TA-53. Sampling for particulate & vapor activation products must be carried out at all times. Gaseous emission monitoring from ES-3 and diffuse monitoring of the beam switchyard must occur when any beam is delivered to the switchyard or beyond. When beam is delivered down Line A, diffuse monitoring must occur for designated areas. When beam is delivered down Line D, gaseous emissions monitoring at ES-2 must take place.

References

The following documents are referenced in this procedure:

- MAQ-024, "Personnel Training"
- MAQ-011, "Logbook Use and Control"
- MAQ-601, "Collecting and Processing Stack Air Particulate and Vapor Samples from TA-53"
- MAQ-616, "Leak Checking LANSCE Stack Sampling Systems"
- 40 CFR 61 Appendix B, Method 114, Paragraph 4.7, Table 2
- 40 CFR 60 Appendix A, Method 5, Paragraph 4.1.4, "Leak-Check Procedures"
- UXR Borescope User's Manual

Note

Actions specified within this procedure, unless preceded with "should" or "may," are to be considered mandatory guidance (i.e., "shall").

Introduction

Description and requirements

The monitored stacks at the Los Alamos Neutron Science Center (LANSCE), located at Los Alamos National Laboratory (LANL) Technical Area 53,are designated TA-53-BLDG-7-ES-2 and TA-53-BLDG-3-ES-3. For simplicity, the stacks are referred to in this procedure as “ES-2” and “ES-3,” respectively.

To ensure proper analysis of TA-53 stack emissions, the air samples must reach the monitoring equipment without significant air flow degredation . This procedure details the methodology to detect any potential malfunctioning parts, leaks, impairments or obstructions in the sampling system.

An annual inspection of the stack sampling systems is required by 40 CFR 61 Appendix B, Method 114, Paragraph 4.7, Table 2.

Responsibilities

MAQ stack inspection staff will perform all steps of this procedure in the proper time interval, or ensure that steps are performed by personnel designated by the MAQ stack inspection staff.

Worker safety and precautions

Precautions and limitations

The internal components of the stack sampling systems may be contaminated with radioactive material. To mitigate this hazard, the time interval between the end of the previous beam operating period and the leak check should be maximized, still allowing sufficient time to resolve any problems that may be detected during the leak check and before the next beam operating period.

Accessibility

At ES-3, the probes are readily accessible from the ES-3 stack pad; at ES-2, however, scaffolding is required to access the probes' location near the top of the stack.

Required IWD

This procedure is used in conjunction with the IWD for this work. Before starting work, ensure the person-in-charge has a fully-signed IWD (Parts 1, 2, and 3) for the job.

Required equipment

The following equipment is required before performing this procedure:

- Anti-C gloves to be worn while handling probes or internal components of sample lines.
- Hand tools to disconnect and remove probes.
- UXR Borescope for internal inspection for sampling systems.
- Borescope camera and laptop computer to record video & images of the inspection, if such recording is desired.
- Scaffolding at the ES-2 stack, to access the sample lines.

Mitigate possible hazards

Historically, there has been no detectable contamination on the probe surfaces. However, to mitigate possible contamination hazards, take the following precautions:

Step	Action
1	Before performing the inspection, consult with HSR-1 to verify the adequacy of these safety precautions. At the discretion of HSR-1, a radiological work permit (RWP) may be required to perform the inspection.
2	Verify with facility operations personnel that no atypical operations are ongoing which could release unanticipated pollutants into the stack (e.g., acid fuming, mercury operations).
3	Conduct prejob briefing and sign Part 3 of the IWD.

Worker safety and precautions, continued

Set up and insection of scaffolding at ES-2	Contact the Facility Coordinator for Building 7 to arrange for the set up of the scaffolding. An inspection of the scaffolding is required before it is used. If performing this procedure extends beyond one day, an inspection of the scaffolding is required for each successive day.
Descibe the system	Before starting the inspection, thoroughly describe the work in the stack logbook for the sampling system being analyzed. Draw a diagram of the system and record the dimensions of the sampling system in the logbook (if the system is identical to previous measurements, reference logbook pages rather than reproduce extensive diagrams and/or volume calculations).

Remove, inspect, and seal probes

Steps to inspect ES-3 probe

To inspect the probe at ES-3, perform the following steps:

Step	Action
1	Prior to removing the sample probes, don gloves to protect against possible contamination.
2	Disconnect fittings and pipes to prepare for probe removal from the stack penetration.
3	Have an RCT survey for contamination. If contamination is found, consult with HSR-1 as to how to proceed; an RWP and additional PPE may be required. If no contamination is found, continue with the inspection.
4	Remove the probe from the stack.
5	Take a contamination smear of the probe and have an RCT count it for the presence of contamination.
6	Once the probes are removed, begin inspection. Record the probe serial number (if applicable).
7	Examine the probes using the UXR Borescope (follow Owner's Manual instructions for use of the borescope) for excessive material buildup, cracking, or other damage. If probe needs cleaning, follow the Hazard Review for cleaning of the probe. If probe appears damaged or otherwise inoperable, make arrangements for repair or replacement of the probe.
8	While the sampling line is disconnected from the probe seal the sampling line with a rubber stopper in order to perform a leak test of the sampling system in accordance with MAQ-616, "Leak Checking LANSCE Stack Sampling System".
9	After the leak test, reinstall the probe and reconnect the sampling lines.
10	Contact local HSR-1 team for contamination survey of any equipment that was exposed to potential contamination from inside the stack or inside the probe during breach of the sampling system.

Steps to inspect ES-2 probe

To inspect the probe at ES-2, perform the following steps:

Step	Action
1	Before climbing to the stack, unplug the heat tape inside building 7 room 200.

Remove, inspect, and seal probes, continued

Step	Action
2	Climb to the building roof and up the scaffolding next to the stack to access the top of the sample lines, where they penetrate the stack wall.
3	Secure tools so they don't get accidentally knocked off the scaffolding. Warn personnel below to remain away from the base of the scaffolding.
4	Don gloves to protect against possible contamination.
5	Disconnect the sample line(s) to be analyzed from the stack wall penetration.
6	Have an RCT survey for contamination. If contamination is found, consult with HSR-1 as to how to proceed; an RWP and additional PPE may be required. If no contamination is found, continue with the inspection.
7	Examine the probes using the UXR Borescope for excessive material buildup, cracking, or other damage. If probe needs cleaning, follow the Hazard Review for cleaning of the probe. If probe appears damaged or otherwise inoperable, make arrangements for repair or replacement of the probe.
8	While the probe is disconnected from the sampling line, perform a leak test of the sampling system in accordance with MAQ-616, "Leak Checking LANSCE Stack Sampling System".
9	After the leak test, reinstall the probe and reconnect the sampling lines; plug in the heat tape.
10	Contact local HSR-1 team for contamination survey of any equipment that was exposed to potential contamination from inside the stack or inside the probe during breach of the sampling system.

Document results

After completion of each stack test and inspection, document the results of the tests in the appropriate logbook for the stack with additional documentation of leaks repaired, etc. Make all logbook entries in accordance with MAQ-011, "Logbook Use and Control".

Prepare a memo summarizing the test results and distribute the memo to :

- LANSCE-FWO
- LANSCE-DO
- RRES-MAQ Project Leader
- Rad-NESHAP File
- RRES-MAQ File

Records resulting from this procedure

Records

The following records, or copies thereof, generated as a result of this procedure are to be stored or submitted **within 4 weeks of completion** as described below:

- Documentation of system leak checks for the ES-2 and ES-3 stacks, in the logbook for the appropriate stack.
- Additional documentation for fixing leaks, etc., as necessary, recorded in the logbooks or appropriate binder.
- A Memorandum for each stack reporting the results of the leak test and probe inspection with distribution to:
    - LANSCE-FWO
    - LANSCE-DO
    - RRES-MAQ Project Leader
    - Rad-NESHAP File
    - RRES-MAQ File